PATENT
0937-0120P

IN THE U.S. PATENT AND TRADEMARK OFFICE

#30

In re application of *Before the Board of Appeals*

Woon-Seong YEO

Appl. No.:	09/055,240	Group:	2752
Filed:	April 6, 1998	Examiner:	NEYZARI

For: OPTICAL DISC HAVING VARIABLE SPARE AREA RATES AND METHOD FOR VARIABLY SETTING THE RATE OF SPARE AREAS IN THE OPTICAL DISC

APPEAL BRIEF

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Applicant submits herewith his Brief on Appeal in triplicate as required by 37 C.F.R. 1.192.

(1) REAL PARTY IN INTEREST:

The real party in interest is LG Electronic, Inc. as evidenced by the assignment recorded at reel 9355, frame 0753-0757.

(2) RELATED APPEALS AND INTERFERENCES:

No related appeals or interferences are known.

(3) STATUS OF THE CLAIMS:

Claims 5-6 stand allowed.

Claims 33-44 stand finally rejected under 35 U.S.C. 103 as being unpatentable over the admitted prior art disclosed in the specification in view of Fukushima et al. (USP 5,111,444).

(4) STATUS OF ANY AMENDMENT FILED SUBSEQUENT TO FINAL REJECTION:

The after final amendment filed on October 31, 2000 adding new claims 45-46 has not been entered.

(5) SUMMARY OF THE INVENTION:

As shown in Fig. 1 of the present invention, optical discs are divided into zones 4, and each zone 4 includes recording area blocks in which digital data is to be recorded. If a defect in a recording area block occurs, then a spare area block within the zone is used in place of the recording area block.

Recognizing that thickness variations in the production of an optical disc result in areas of the optical disc having higher defect rates, the inventors have developed an optical disc wherein the ratio of spare area to recording area is greater in zones having higher defect rates.

As illustrated in Fig. 2, an optical disc has a fairly constant thickness between inner and outer radial circumference portions, but varying thickness at the inner and outer radial circumference portions. Consequently, as described on page 4 of the application, defects requiring the use of spare areas occur more frequently at the inner and outer radial circumference portions.

As shown by table 1 (see pages 2-3 of the specification), in the prior art, the ratio of spare area to recording area was maintained constant over the zones of the optical disc. Because of this, in a zone having more frequent errors, all of the spare areas can become used, and the zone can no longer be used for storing data.

The inventors increased the reliability of the optical disc by varying, as shown for example in tables 2 and 3 (see pages 7 and 8-9 of the specification) of the application, the ratio of the spare area to the recording area. As shown in tables 2 and 3, the ratio of spare area to recording area is greater at the inner and outer radial zones of the optical disc.

(6) ISSUES PRESENTED:

Issue 1: Are the application papers properly objectionable under Rule 52(a)?

Issue 2: Are claims 33-44 unpatentable over Applicant's admitted prior art in view of Fukushima under 35 U.S.C. 103.

(7) GROUPING OF CLAIMS

For the purposes of appeal, claims 33-44 should be grouped together.

(8) ARGUMENTS WITH RESPECT TO THE ISSUES PRESENTED FOR REVIEW:

(a) Issue 1. Are the application papers properly objectionable under Rule 52(a)?

The application papers stand objected to under Rule 52(a). Applicant responded to this objection in the amendment filed April 22, 1999, and does not understand why the Examiner continues to maintain this objection. If the Examiner truly means to continue this rejection, he is respectfully requested to particularly point out the application papers violating Rule 52(a) and the reason for the violation.

(b) Issue 2. Are claims 33-44 unpatentable over Applicant's admitted prior art in view of Fukushima under 35 U.S.C. 103.

In both the Final Office Action of March 2, 2000 and the previous Office Action of July 9, 1999, the Examiner correctly recognizes that the APA and Fukushima teach (1) dividing an optical disk medium into concentric zones having main data storage areas and spare data storage areas and (2) that for each zone the ratio of (i) the total size of the spare areas to (ii) the total size of the main area is the same. Namely, the ratio remains constant over the zones. Consequently, the Examiner has also recognized that the APA and Fukushima fail to disclose or suggest "a ratio between a size of each main area to a size of a corresponding contiguous spare area being varied," as recited in claim 33.

The Examiner, however, argues that the size of the spare areas in the APA are variable as in the present invention and that varying the rate

or ratio in the APA or Fukushima would have been a matter of design choice.

Applicant respectfully disagrees.

First, the size of the spare areas in the APA are varied for the express purpose of maintaining the ratio or rate between size of the main area to the size of the spare areas constant across the zones. By contrast, as described with respect to the embodiments of the present invention, the size of the spare area is varied so that this ratio or rate varies across zones. Consequently, part of the foundation for the Examiner's reasoning is in error.

Turning next to the design choice argument, the Federal Circuit in the case In re Chu, 36 USPQ2d 1089 (Fed. Cir. 1995), explained the proper analysis of a design choice rejection. The claims at issue in In re Chu required the placement of an SCR catalyst within a bag retainer. It was admitted by the Examiner and the Board of Appeals that the references cited in the art grounds of rejection failed to disclose this feature. However, the Board argued that this placement would have been a matter of design choice. Chu rebutted the design choice rejection by providing arguments, not found in the specification, as to benefits achieved by placing the SCR catalyst within the bag retainer.

The Federal Circuit held that the design choice rejection was improper, and that Chu's claims were not obvious over the cited art. The Federal Circuit stated that first there was no teaching of the claimed

placement of the SCR catalyst within the cited prior art, and second, Chu's arguments as to the advantages achieved by this placement clearly counter the design choice rejection. The Federal Circuit also pointed out the arguments supplied to counter the design choice rejection do not have to be found within the specification, but could, as in In re Chu be provided in applicant's arguments alone.

The situation in the present application is directly analogous to the situation in In re Chu. First, as admitted by the Examiner, there is no teaching in either the APA or Fukushima to vary "a ratio between a size of each main area to a size of a corresponding contiguous spare area," as recited in claim 33.

Second, varying the ratio as claimed increases the reliability of the optical disc. As described on page 4 of the specification, defects requiring the use of spare areas occur more frequently at certain regions of the optical disk. Because the APA and Fukushima provide a constant ratio across the zones, in a zone having more frequent errors, all of the spare error can become used. When this happens, the zone can no longer be used for storing data; thus, decreasing the reliability of the optical disk.

By varying the ratio as claimed, the claimed invention can provide a greater amount of spare area in those regions experiencing more frequent errors. As such, zones continue to be usable, and the reliability of the optical disk increases.

Accordingly, the Examiner's design choice rejection has been clearly countered as set forth in In re Chu. Having met the criteria to overcome the Examiner's design choice rejection as established by the Federal Circuit, Applicant respectfully requests that the Examiner's art grounds of rejection of claim 33 be reversed.

Independent claim 39 includes limitations to which the above-discussed arguments equally apply. Accordingly, claim 39 is patentable over the APA in view of Fukushima.

Claims 34-38 and 40-44, dependent upon claims 33 and 39, are patentable for the reasons stated above with respect to claims 33 and 39 as well as on their own merits.

For all the reasons set forth above, it is clear that the present invention as recited in applicant's claims 33-44 are not rendered obvious by Applicant's admitted prior art in view of Fukushima. Accordingly, it is respectfully submitted that the claimed invention should properly be patentable over the cited art. It is therefore respectfully requested that this Appeal be granted and that the Examiner be reversed.

Respectfully submitted,

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(9) APPENDIX:

5. An optical disc comprising:

a main area storing digital data, said main area being divided into a plurality of zones; and

a spare area having an area within each of said zones of said main area,

wherein at least one area of said spare area varies in size relative to at least one other area of said spare area, wherein said optical disc is divided into 23 zones, and the rates of said spare areas are set such that zone 0 is to 10.73%, zone 1 is to 10.75%, zones 2 and 3 are to 8.06%, zones 4 and 5 are to 5.37%, zones 6 and 7 are to 2.68%, zones 8 to 12 are to 2.69%, zones 13 to 15 are to 2.68%, zones 16 and 17 are to 2.69%, zones 18 and 19 are to 5.37%, zone 20 is to 8.06%, zone 21 is to 8.05%, zone 22 is to 10.74%, and zone 23 is to 10.73%.

6. An optical disc comprising:

a main area storing digital data, said main area being divided into a plurality of zones; and

a spare area having an area within each of said zones of said main area,

wherein at least one area of said spare area varies in size relative to at least one other area of said spare area, wherein said optical disc is divided into 23 zones, and the rates of said spare areas are set such that

zone 0 is to 8.05%, zones 1 to 3 are to 8.06%, zones 4 and 5 are to 5.37%, zones 6 and 7 are to 2.68%, zones 8 to 12 are to 2.69%, zones 13 to 15 are to 2.68%, zones 16 to 18 are to 5.37%, zones 19 and 20 are to 8.05%, zones 21 and 22 are to 8.05%, and zone 23 is to 8.72%.

33. An optical disk, comprising:

a series of several main areas and arranged to store digital data; and

a series of contiguous spare areas, each main area corresponding to a respective single one of the contiguous spare areas, a ratio between a size of each main area to a size of a corresponding contiguous spare area being varied.

34. The optical disk of claim 33, wherein each of the contiguous spare areas is positioned adjacent to a corresponding one of the series of main areas.

35. The optical disk of claim 33, wherein the ratio between the size of a spare area and the size of a corresponding main area depends upon a thickness of the disk at the position of the main area.

36. The optical disk of claim 33, wherein the ratio between the size of a spare area and the size of a corresponding main area depends upon a radial position of the main area on the disk.

37. The optical disk of claim 33, wherein the ratio of the size of the spare areas to the size of the corresponding main areas increases in an inner radial direction of the disk.

38. The optical disk of claim 33, wherein the ratio of the size of the spare areas to the size of the corresponding main areas increases in an outer radial direction of the disk.

39. A method for setting spare areas of corresponding main zones of an optical disk, said method comprising:

configuring an optical disk with a series of several main areas structured and arranged to store digital data, each main area having a single contiguous spare area associated therewith; and

variably setting a ratio between a size of each contiguous spare area to a size of each main area associated therewith.

40. The method of claim 39, wherein each of the contiguous spare areas is positioned adjacent to a corresponding one of the series of main areas.

41. The method of claim 39, wherein the ratio between the size of a spare area and the size of a corresponding main area depends upon a thickness of the disk at the position of the main area.

42. The method of claim 39, wherein the ratio between the size of a spare area and the size of a corresponding main area depends upon a radial position of the main area on the disk.

43. The method of claim 39, wherein the ratio of the size of the spare areas to the size of the corresponding main areas increases in an inner radial direction of the disk.

44. The method of claim 39, wherein the ratio of the size of the spare areas to the size of the corresponding main areas increases in an outer radial direction of the disk.